ment lies. That this standard is to-day probably second to none is to be seen in the Kilauea model which presents several important innovations in the development of land relief, including the application of cirkut panorama and aerial photography and the cycloramic background.

The Kilauea undertaking marks the advent of the American geologist into the work most complete and effective of any known for representation of the immense forms with which he deals. Some conception of what this subject, calling for the best that modern science and art can offer, has in store, may be had from statements of those who have visited the active volcano and maintain that a better comprehension of the huge crater may be obtained from the model in Cambridge than in Hawaii itself, owing to the vast dimensions of the Kilauea region. What is yet in store for the earth sciences through the naturalistic reproduction in relief of remaining great types of land form, should give some measure of the value of this contribution.

ROBERT W. SAYLES.

GEOLOGICAL SECTION,
HARVARD UNIVERSITY MUSEUM

BOTRYTIS AND SCLEROTINIA

CONNECTION has recently been established between an apparently undescribed species of *Sclerotinia* occurring in woods in the upper end of Van Cortlandt Park on the rootstocks of wild geranium and a species of *Botrytis* occurring on the roots and rootstocks of the same host. The field observations were made by the writer and the culture work was conducted in the New York Botanical Garden by Professor W. T. Horne. A joint paper will be offered on the subject in connection with the celebration of the fiftieth anniversary of the Torrey Botanical Club this fall. As it will be several months before this paper can appear in print, it was thought advisable to call attention to the facts at this time. While connection between *Botrytis* and *Sclerotinia* has been claimed by DeBary and predicted by more recent workers, this is one of the first and possibly the first case in which the connection has been definitely established by culture experiments.

FRED J. SEAVER

THE NEW YORK BOTANICAL GARDEN

QUOTATIONS

A BRITISH REPORT ON INDUSTRIAL RESEARCH IN AMERICA

THE Advisory Council for Scientific and Industrial Research has issued the first of a series of papers in which, under the title of Science and Industry, it intends publishing information of value to manufacturers. The intention was announced in the report of the Committee of the Privy Council, of which an account appeared in these columns; and the present instalment by Mr. A. P. M. Fleming, of the British Westinghouse Company, on industrial research in the United States, is so full of information and practical suggestion that engineers will learn with regret that there is little prospect of further instalments appearing during the war.

The paper differs from much that issues from the Stationery Office in being essentially a practical work, not loaded with statistics and theoretical considerations. It is a plain statement of facts and practical suggestions very important to industry, set out for British manufacturers by one of their own body in such a way that what it describes and what it suggests can readily be understood; it is illustrated by 85 half-page or full-page blocks, and published—at the public cost—at the price of 1 s. No appreciable expense either of time or brain-stuff or money stands between the message of the volume and the public for whom it is meant; and while there is no point in summarizing what can be easily acquired and digested, some of its facts and the consequences that they suggest are worth consideration.

The modern tendency of American manufacture to research may perhaps be seen most strikingly in what is being done by manufacturing and similar corporations themselves. Examples are to be found alike in the mechanical, electrical, and chemical industries, and are on every variety of scale, up to the £30,000 per year to which the Eastman Kodak Com-

pany devotes something under 1 per cent. of its profits, and the £80,000 to £100,000 a year spent by the General Electric Company of Schenectady. Mr. Fleming gives particulars of what is being done by each of some twenty corporations, but the list could easily be made very much longer. Most of these laboratories have sprung up in quite recent years; and their number is constantly increasing. The increase is not merely in number. It is as remarkable in its growing breadth. The laboratories of these firms undertake not merely the routine of testing of materials and products and the more or less empirical adventures after new products that was formerly the business of a works' laboratory. At the one end of the scale they carry out experiments on the discovery of new products and the elaboration of new designs into the full manufacturing scale, and the laboratory supplies the needs of the market as if it were itself a works, until they outgrow the capacity of its plant and call for a new works of their own. At the other end of the scale they undertake inquiries into questions of pure science, of the solution of which no one can see any industrial application. They keep men investigating such problems constantly and perseveringly, and give them admirably equipped laboratories for the purpose. This sort of thing is being done in works after works, and every year adds to their number and the elaboration of their equipment. All the time, in spite of the enormous sums that are being spent on what at first sight is not only unproductive work, but work which tends to subordinate the wholesome rule of practise to the fantastic and costly demands of laboratories, the thing pays. The fact that the habit has grown so far is good *prima-facie* evidence that it must pay, for American business houses do not fling good money after bad. But there is no need to depend on inference or *prima-facie* evidence. The individual experience of those who have tried it shows that in fact it has paid, and the air in America is thick with plans to extend the practise of applying science to help industry; for great as is the extent of what has been done already, it is only a tiny fraction of what in American industry there is still room and the intention to do.

Side by side with these corporations and firms three groups of institutions are working to the same ends. Mr. Fleming quotes a dozen or more separate industries with their trade associations, each of which is undertaking research for the common benefit of their members; sometimes in their own common research laboratories, sometimes in those of their members, sometimes through university or the Bureau of Standards staffs. An excellent instance of an important trade of which all members, great as well as small, have gained greatly by research work communicated to all alike, is that of the canners. The Canners' Association spends some £6,000 or £7,000 a year on its central laboratory, besides a good deal more on work done in the factories of individual members; and it is considered that the largest members have as much interest as the small in the results being made common to all, because the risk of the whole trade being discredited by imperfect production is thus minimized. Over a dozen universities and colleges, again, are now running laboratories devoted not only to investigations in pure science which may ultimately find a practical application, but to industrial researches for which the application is waiting as soon as the solution of the problems is found. In many instances such work is done not on the strength of foundations, but at the request and expense and for the benefit of commercial firms and other industrial bodies, such as railway companies.—London *Times*.

SCIENTIFIC BOOKS

Use of Mean Sea Level as the Datum for Elevations. (Special Publication No. 41.) By E. Lester Jones, Superintendent, U. S. Coast and Geodetic Survey, Washington, Government Printing Office. 1917.

This pamphlet presents a very strong case in favor of the adoption of a single datum for the elevations of the country in order to eliminate the confusion which results from the employment of arbitrary planes of reference.